M/035/002
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June 11, 1992

Mr. Lowell Braxton
Utah Department of Natural Resources
Division of Oil, Gas, & Mining
355 West North Temple
III Triad Center, Suite 350
Salt Lake City, UT 84180-1203

Subject: Response to Technical Review, Bluewater I Repository Installation and Reclamation Plans, Bingham Canyon Mine, Kennecott Utah Copper, M/035/002, Salt Lake County, Utah

Dear Mr. Braxton:

Please find enclosed Kennecott Utah Copper's (KUC's) responses to the Division's review of our July 17, 1991 informational submittal for the Bluewater I Repository. Each comment or question, as presented in the Division's correspondence dated January 13, 1992, is reproduced in bold type followed by KUC's response.

R613-004-105 - Maps, Drawings and Photographs

105.2.12 - Border outlining acreage

The operator needs to establish a figure for the amount of acreage to be disturbed by this disposal facility. The acreage should correspond to the information provided on the maps. - HWS

Enclosed is Drawing Number 451-T-349 Rev. 1, which details the Bluewater I Repository stockpile and borrow area locations with acreage estimates.

The total projected disturbance associated with construction of the Bluewater I Repository, Delta Area Tailings Removal, and related roads is approximately 81 acres.

All volume estimates are based on the 1991 Delta Area Removal Action Work Plan. Other removal actions, currently under negotiation with the U. S. Environmental Protection Agency (USEPA), when concluded, will probably increase the volume excavated and therefore the size and duration of the Bluewater I Repository.

105.3 - Slopes, roads, pads, impoundment ponds, maps, etc.

Map(s) indicating the location of borrow areas to be used for clay liners, topsoil, etc., must be made part of the plan. Also, please indicate the volume of materials to be used and the extent of disturbance associated with the borrow areas (acreage). - AAG & HWS

Drawing Number 451-T-349 identifies the location, type, and acreage of topsoil stockpiles, the select clay stockpile used for liner material, temporary tailings stockpiles, and general borrow areas used for clay, aggregate, sand, gravel, and select fill.

Topsoil salvage depth is projected to be a minimum of approximately 8 inches throughout the construction area. Total topsoil stockpile volume is conservatively estimated at 78,000 bank cubic yards. Topsoil replacement on the Repository over the 36" frost protection layer will total 7,600 cubic yards. This total is based on a minimum replacement depth of 8 inches. Actual topsoil salvage volumes and replacement depth may be greater.

The volume of clay material used for the 12" bottom layer and cap is approximately 22,500 cubic yards.

The volume of clayey soil utilized as a frost protection layer on top of the clay barrier will total approximately 34,000 cubic yards.

Borrow areas comprise approximately 59.0 acres of the estimated combined new disturbance for this project. This acreage is an estimate of the overall area that may be utilized for various phases of construction. Actual disturbance should be somewhat less.

Sheet 2 of 3 DWG no 451-T-506 shows 34 feet of clayey soil while the plan states 36 inches. Please clarify this discrepancy. - AAG

Sheet 2 of 3, Dwg. No. 451-T-506 shows 34" of clayey soil. The figure of 36 inches as stated in the plan is correct.

R613-004-109 - Impact Assessment

109.1 - Surface & groundwater systems

What type of "corrective action plan" will be implemented in

the event that lead and arsenic seepage/leachate exceeds acceptable effluent limits/standards? - DWH

The Seepage Collection System reports to the Mine Leachate Collection System which consists of concrete lined collection/routing ditches and collection boxes. The Seepage Collection System and the Seepage Collection Box do not constitute a point of compliance.

109.4 - Slope stability, erosion control, air quality, public health & safety

Will the 3:1 slope of the repository be covered only by 12" of clay and the geotextile? Sheet 2 of 3, section A-A, doesn't show anything else. The depth of soil material will be insufficient for effective plant establishment and therefore ineffective for long term (final reclamation) erosion control. - AAG & HWS

The 3:1 slope on the southeast face of the repository is an interim configuration designed for ease of reentry and expansion of the repository. Upon completion of cleanup activities and final disposition of planned removal actions, the ultimate configuration of the repository will conform to the 1 foot clay cap, 3 foot clayey soil, and minimum 8 inch topsoil design as shown on sheet 2 of 3, Dwg. No. 451-T-506.

R613-004-110 - Reclamation Plan

110.4 - Treatment, location and disposition of deleterious materials

The plan indicates that any leachate generated from the repository will discharge through the flow measurement system, then into the Bluewater I canal. Is this canal lined? The MTL then flows via lined canal into the east head reservoir. Is this reservoir lined? (see DWG #453-T-161) - AAG

The Bluewater I canal consists of HDPE pipe and concrete lined canal reporting to the Mine Leach Collection System which is also concrete lined. The East Head Reservoir is also concrete lined.

110.5 - Revegetation planting program and topsoil redistribution

The plan states, on the page describing revegetation, that drill seeding will be performed at a depth of 3 inches. This

is an excessive depth for most species. Please adjust this depth in your plan narrative to 1/4 - 1/2 inches in depth. Also, the revegetation will only need to be monitored initially for three years. At that time, a determination will be made concerning the need for further seeding and/or continued monitoring. - HWS

The 3" depth stated in the plan is incorrect. The correct target depth is 1/2 inch. Monitoring requirements have been modified to reflect the Division's comment.

The operator needs to develop a discussion concerning reclamation of the topsoil and clay borrow areas and their reclamation. - HWS

All borrow areas will be regraded to minimize cut points and reduce overall slopes equal to or less than 3:1. Ripping or scarifying as necessary will be performed in areas subjected to extensive traffic or consisting of hard clayey subsoils. Clay borrow areas may require import of loamy or sandy materials to alleviate hard pack conditions.

Topsoil will be moved from stockpile locations and replaced at an average thickness equivalent to the original topsoil salvage depth of 8 inches.

Agronomic practices and seed mix to be used was previously described in the June 28, 1992 informational submittal.

110 - Time frames for reclamation

What is the anticipated date for completing this project? What time frames have been established for phased completion of the project? - AAG

The present schedule as detailed in the Administrative Order or Consent with the USEPA is for completion of this project in August 1992. Final closure is, however, dependent upon completion of present and anticipated future removal actions and cleanups.

R613-004-111 - Reclamation Practices

111.4 - Deleterious material safely removed or isolated

The plan indicates that monitoring of the seepage collection system will be ongoing. The plan does not indicate how long monitoring will continue. What will happen when this

collection system is finally sealed off? No closure or post-closure plan currently exists. - HWS

The plan indicates that an annual percolation rate of .2"/yr has been established for water moisture infiltrating the clay cap. Will this create a problem of leachate build-up over time? Why or why not? - HWS

Also, see comment under R613-004-109.1 - DWH

Monitoring will continue for 30 years following completion of repository construction. No plans currently exist to seal off the Seepage Collection System or the Mine Leach Collection System. Kennecott will work with the appropriate regulatory agencies on the design and implementation of proper closure and post closure plans.

The evapotranspiration rate in this area will prevent any significant buildup of moisture within the repository. Additionally, the basic design of the repository includes a drainage system underlying the repository material. This drainage system will effectively prevent any buildup of leachate over time.

If monitoring results indicate a potential threat to groundwater quality, a plan for corrective action will be developed.

111-8 - Roads and pads when no longer needed

Will road access to the site be maintained indefinitely? - AAG

Will the 24" culvert remain to bypass surface runoff under access road at the base of repository? What size storm is this culvert sized for? What are the long-term maintenance provisions for this culvert if it is to remain? What are the long-term monitoring provisions for the 4" seepage control pipe? - DWH

As currently planned, the road access will be maintained indefinitely. Therefore, the 24" culvert will also remain.

If the repository is expanded, the culvert will be moved to a new location. The culvert is sized for greater than the 10 year 24 hour storm event. Long term maintenance will consist of periodic inspections, removal of debris and sediment when necessary, and replacement of the culvert when it is no longer competent.

See the compliance monitoring plan section of the Ground Water Permit.

111.9 - Dams and Impoundments

Will diversion structures associated with the impounding structure be sized for the 100 yr storm event?

Diversion structures will be sized for the 10 year 24 hr storm event.

R613-004-113 - Surety

What are the anticipated costs for decommissioning, reclamation, maintenance and monitoring, associated with this project? - DWH

The Bluewater I repository is designed as a permanent structure with an indeterminate life. The "target" material to be removed, implementation, design, and construction of this repository are not directly related to current mining activities at the Bingham Canyon Mine. Maintenance and monitoring of the repository will, however, be an ongoing operational responsibility of Kennecott Utah Copper.

The responses provided above should answer your questions as presented. If you have additional questions or comments, please contact me at (801) 569-6555.

Sincerely,

Frederick D. Fox
Director, Environmental Affairs

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cc: Wayne Hedburg, DOGM